

**CLAIMS**

1. A method of measuring a temperature value associated with melting, softening  
5 or decomposition, comprising:  
providing a sample support plate;  
placing a plurality of discrete samples on the support plate;  
varying the temperature of the support plate;  
10 observing the sample to detect a change in luminosity or reflectance caused by a  
change of state of the sample;  
recording the temperature of the plate associated with the change in luminosity or  
reflectance.
2. A method according to claim 1 in which images of the sample support plate  
15 are reviewed to detect a change of image intensity at sample locations, consequent on  
a change of state of the sample.
3. A method according to claim 2 in which an imaging device feeds images of  
the sample support plate to a computer, and a temperature sensing device feed  
20 temperatures to the computer for association with the images, and image processing  
software is used to review the images to detect changes in image intensity, so that  
changes in intensity consequent upon a change in state of the sample can be associated  
with a temperature value.
- 25 4. A method of measuring temperature value associated with melting, softening  
or decomposition according to claim 3, comprising:  
forming an array of samples on a support tray;  
placing the support tray onto a heating device provided with temperature sensing  
means;  
30 illuminating the support tray and observing the array of samples by an imaging device;  
varying the temperature of the heating device over a temperature range from below the  
anticipated melting, softening or decomposition point of the samples to above the  
anticipated melting, softening or decomposition point of the samples;

feeding image data from the imaging device to an image recording device during the temperature variation sequence;

recording temperature values for the temperature of the heating device associated with each feed of image data;

- 5     reviewing the image data to detect changes in the image, such as image intensity, at each or selected sample locations;

logging the temperature of the heating device recorded in respect of an image change associated with a change in state of a sample.

- 10     5.     A method according to claim 4 in which image processing software is used to detect changes in the image, for example the white intensity of the image, at each sample location.

6.     A method according to claim 5 in which the heating device is provided with  
15     temperature sensing means that gives a computer readable output of the temperature of the block; the imaging device is a digital camera or webcam that feeds images to a computer loaded with the image processing software; the computer records temperature data associated with each image; and the image processing software is used to detect changes in the image intensity at each or selected sample locations; and  
20     the temperature associated with a significant change in intensity is noted.

7.     A method according to claim 6 in which sequential images transmitted to the computer are stored in the computer memory with a temperature transmitted from the heating block at the time of creation of the image, and after completion of the heating  
25     cycle the stored images are processed to generate data relating to the intensity of the image at selected sample locations, and the intensity data and temperature data are used to generate a plot of intensity against temperature from which melting point values for the selected samples can be assessed.

8. Apparatus for measuring melting point values comprising:  
a heating device with temperature sensing means that gives a computer readable output of the temperature of the block;  
a sample support tray that can be placed on the heating device to heat samples placed  
5 on the support tray;  
a camera that can be positioned to observe samples on the support tray; means for illuminating the samples for observation by the camera;  
control means for varying the temperature of the heating device over a temperature range from below the anticipated melting, softening or decomposition point of the  
10 samples to above the anticipated melting, softening or decomposition points of the samples;  
a computer to receive image data from the camera and temperature data from the sensing means on the heating block;  
recording means to log images at each or selected sample locations and record the  
15 temperature of the heating block;  
an image processing program loaded in the computer and operable to review the images received from the camera, for example monitoring the intensity of the image at each or selected sample locations;  
whereby significant changes in the images can be correlated with the temperature of  
20 the heating block.

9. Apparatus according to claim 8 in which the camera is a digital camera or webcam transmitting image data to the computer during the heating sequence.